

ADDENDUM TO:
LARWOOD BRIDGE
Spanning Crabtree Creek, Fish Hatchery Road (CR 648)
Lacomb vicinity
Linn County
Oregon

HAER OR-124
OR-124

PHOTOGRAPHS

PAPER COPIES OF COLOR TRANSPARENCIES

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

HISTORIC AMERICAN ENGINEERING RECORD

Addendum to LARWOOD BRIDGE HAER No. OR-124

Location: Spanning Crabtree Creek at Fish Hatchery Road (County Road 648), Lacombe vicinity, Linn County, Oregon
UTM: 10.525578.4941917, Jordan, Oregon, Quad.

World Guide #: 37-22-06

Structural Type: Howe through truss covered bridge

Date of Construction: Reportedly 1939; Possibly 1941

Designer: Oregon State Highway Commission

Builder: Linn County Engineering Department

Owner: Linn County, Oregon

Previous Use: Vehicular bridge

Present Use: Vehicular bridge

Significance: Larwood Bridge is one of the best surviving examples of the standard Howe truss covered bridge designed by the Oregon State Highway Commission in early 20th century. It illustrates the open-sided housing style adopted by Linn County for covered bridges in the 1930s and 40s. The bridge continues to carry traffic and is the focal point of Larwood Wayside Park.

Historian: Researched and written by Lola Bennett, September 2003

Project Information: The National Covered Bridges Recording Project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. HAER is administered by the Historic American Buildings Survey/Historic American Engineering Record, a division of the National Park Service, U.S. Department of the Interior. The Federal Highway Administration funded the project.

Chronology

- 1805 America's first covered bridge built at Philadelphia
- 1840 William Howe patents Howe truss
- 1836 First pioneers make the 2,000-mile journey to Oregon via covered wagon
- 1843 The "great migration" begins; 1,000 pioneers travel the Oregon Trail
- 1849 Oregon Provisional Government enables county governments to build bridges
- 1850 Oregon population 13,294
- 1851 Oregon's first covered bridge built at Oregon City
- 1853 First petition for a public bridge in Linn County
- 1859 Oregon becomes the 33rd state admitted to the Union
- 1859 Oregon becomes a state
- 1888 William Larwood settles near this site
- 1893 Larwood post office established
- 1894 Surveyor's map shows a bridge at this site
- 1930 Linn County adopts Oregon State Highway Commission standard plans for bridges
- 1939 Larwood Bridge erected
- 1954 Oregon has 149 covered bridges
- 1965 Linn County develops Larwood Wayside Park
- 1977 Oregon has 56 covered bridges
- 1979 Covered Bridge Society of Oregon formed
- 2003 Larwood Bridge recorded by the Historic American Engineering Record

Introduction

Oregon's first documented covered bridge was built at Salem in 1862.¹ In a region of plentiful virgin timber, wooden bridges were a practical, economical solution to crossing rivers, and during the next three decades, hundreds of covered bridges were built. Floods, however, were an ongoing threat. When large numbers of covered bridges were destroyed by floods in the 1880s and 90s, it encouraged the growing trend toward metal bridges. The late nineteenth and early twentieth centuries saw an enormous reduction in Oregon's covered bridge population. Ironically, just as the horse-and-buggy era came to a close, and signs of "progress" were everywhere, a new era of covered bridge building began to unfold.

In 1913 the Oregon State Highway Department was created and charged with establishing and maintaining a system of roads and bridges throughout the state, including those financed by the counties. Among the Department's first tasks were publishing a manual of bridge specifications and making bridge design services available to county engineering departments. State engineers initially favored concrete and steel bridges, but eventually drew up standardized plans for timber trusses, under pressure from the counties. This benefited the local lumber industry and proved to be a sound economic measure during the steel shortages of the world wars.

Some covered bridges were built on state highways between 1918 and 1925, but the majority were built on county roads in the 1920s, 30s and 40s. In 1954, Benton County's Irish Bend Bridge became the last covered bridge in the United States built for purely economic reasons, and Oregon's second covered bridge era came to a close. From a peak of about 300 covered bridges in 1938, Oregon's covered bridge population steadily declined in the mid-twentieth century. By the 1960s, there were only 90 covered bridges left in the state. In 1979, the Covered Bridge Society of Oregon was formed to raise awareness and help preserve these historic structures. Cooperation from the Oregon State Highway Department and county governments has resulted in the rehabilitation and preservation of 45² covered bridges in Oregon.

Description

Larwood Bridge is a single-span, 105-foot Howe through truss covered bridge on concrete piers. There are three 19-foot approaches on the west end and one 13-foot approach on the east end. The bridge is 111 feet long, portal to portal, and 26 feet wide. The trusses are 19 feet high and the roadway is 19 feet wide.

¹ Dwight A. Smith, James B. Norman and Pieter T. Dykman, *Historic Highway Bridges of Oregon*, revised edition (Portland: Oregon Historical Society Press, 1989), p. 29.

² In 1995 Oregon had 45 authentic covered bridges, that is, housed, load-bearing, single-span wooden truss bridges. Four additional bridges are housed by have girders, slabs or steel trusses as their main support system.

The upper and lower chords of each truss are composed of two 12x16" timbers, blocked and bolted together. The upper and lower chords are connected with three 1-1/2" diameter vertical tension rods at each panel point. The rods are held in place with plates and nuts above the upper chord and below the lower chord. Within each panel is a pair of 10"x12" diagonal braces angling up toward the center of the bridge. The center panel of each truss also has counter diagonals. The braces notch into upper chord at in the end panels and bear on angle blocks in the center panels.

The lower chords are seated on bedding timbers on top of the concrete piers. At each panel point, a 14"x26" transverse floor beam hangs below the lower chords by means of tension rods with threaded ends. There are nine lines of 6"x16" stringers on top of the floor beams and 4"x12" plank decking nailed transversely on top of the stringers. The wearing surface is asphalt.

Upper lateral bracing consists of a 6"x8" tie beam at each panel point, with 6"x6" cross-bracing between the tie beams. 2"x6" rafters are spaced at 18". There are 2"x6" collar ties between the rafters. The gable roof is covered with wood shingles nailed to 1"x6" purlins on top of the rafters. The lower portions of the trusses and portals are covered with board and batten siding, leaving the sides of the bridge open to allow light and air into the bridge.

History

Sometime prior to 1878, William Cyrus established a saw mill near this site on Crabtree Creek.³ In 1888, William T. Larwood settled nearby, built a store and blacksmith shop, platted a town, and established a post office in 1893. There was a bridge at this location by 1894, when it appears on a county survey map. No conclusive documentary evidence has been found concerning that structure, but presumably it was a wooden bridge, and it may have been a covered bridge. Within a decade, it was apparent that Larwood would never grow into the town William Larwood had envisioned, and the post office was discontinued in 1903.⁴

According to Oregon State Highway Commission records, the present bridge (Linn County Bridge #12876) was built in 1939 at a cost of \$7,000, although no county records were found to confirm this date.⁵ Curiously, a news item from the May 22, 1941 edition of the *Scio Tribune* suggests that the bridge *may* have been built in 1941: "*Reconstruction at Larwood Bridge was to start this week. The old covered bridge will be torn down.*"⁶ Research on the adjacent bridge over Roaring River (Linn County Bridge #12877) indicates that the present steel stringer span was built in 1952 to replace a 1937 uncovered wooden pony truss span. If, indeed, the existing covered bridge was built in 1941, the reported 1939 date *could* conceivably be the date when the Oregon State Highway Commission issued plans for this structure.⁷

³ *Historical Atlas map of Marion & Linn Counties, Oregon* (San Francisco: Edgar Williams & Co., 1878).

⁴ *Land of Linn*

⁵ Oregon State Highway Commission Bridge Inventory Inspection Record, 11-19-42.

⁶ *Scio Tribune* (Scio, Oregon), 22 May 1941.

⁷ Oregon State Highway Commission plans for Larwood Bridge have not been found.

Builder

When Linn County began building modern covered bridges in the 1920s, they experimented with an economical type of housing that had a wide roof, but no siding. After discovering that these open-truss bridges didn't last long, the Linn County Engineering Department adopted a housing style with weatherboarding, arched portals and partially-exposed trusses, which protected the critical parts of the structure, while allowing maximum light and air into the bridge. Linn County continued to build covered bridges through the 1940s. Today, Linn County has nine⁸ surviving covered bridges:

Design

In 1840, Massachusetts millwright William Howe (1803-1852) patented a parallel-chord truss with vertical iron tension rods and diagonal wooden braces and counterbraces crossing within each panel. By substituting adjustable iron rods for the wooden posts of the Long truss (1830), Howe was able to overcome the inherent difficulty of creating tension connections in wood and simplify the process of erecting and repairing bridges. Used extensively in the United States and Europe, primarily for railroad bridges, the Howe truss was endorsed by the American Society of Civil Engineers as "*the most perfect wooden bridge ever built*."⁹ The Howe truss successfully made the transition to the construction of all-metal bridges, but was eventually superseded by the all-metal Pratt truss (1844).

⁸ *The World Guide to Covered Bridges* database currently includes two non-authentic covered bridges: #37-22-16 Dahlenburg Bridge(1989) and #37-22-19 Joel Whittmore Bridge (1990).

⁹ American Society of Civil Engineers, *Transactions* (1878): 340.

Sources

- Adams, Kramer. *Covered Bridges of the West*. Berkeley: Howell-North, 1963.
- Cockrell, Nick and Bill. *Roofs Over Rivers: A Guide to Oregon's Covered Bridges*. Beaverton, OR: Touchstone Press, 1978.
- Conwill, Joseph D. "Oregon's Covered Bridges in Context," *Bridge Tender* 4 (Winter 1983): 1-3.
- Gaston, Joseph. *The Centennial History of Oregon, 1811-1912*. Chicago: S.J. Clarke Publishing Co., 1912.
- Historical Atlas Map of Marion & Linn Counties, Oregon*. San Francisco: Edgar Williams & Co., 1878.
- Lewis, John H. *Bridge Manual Containing Standards, General Information and Instructions*. Salem, Oregon: State Highway Commission, 1916.
- McCullough, Conde B. *Economics of Highway Bridge Types*. (Chicago: Gillette Publishing Company, 1929).
- Mills, Randall V. "The Covered Bridge in Oregon: A Continuing Tradition," *Western Folklore*, 7 (April 1948): 101-114.
- Nagle, Carl Scott, "A Historical-Geographical Analysis of Covered Bridges in Oregon," masters thesis, Bowling Green State University, 1978.
- Nelson, Lee H. *A Century of Oregon Covered Bridges 1851-1952*. Portland: Oregon Historical Society, 1960.
- Oregon State Highway Commission. "Bridge Inventory Inspection Record: Bridge over Crabtree Creek, Linn County." 1942.
- Oregon State Highway Commission. *Second Annual Report of the Engineer*. Salem, 1915.
- Ricketts, E.G. "Covered Bridges in Oregon," typed manuscript, November 1938. Oregon SHPO files.